LBI-38551A

Maintenance Manual

MASTR[®] II BASE STATION 12/24V POWER SUPPLY 19A149979P1 - 120 VOLT/60 Hz 19A149979P2 - 230 VOLT/50 Hz



THESE SERVICING INSTRUCTIONS ARE FOR USE BY QUALIFIED PERSON-NEL ONLY. TO AVOID ELECTRIC SHOCK DO NOT PERFORM ANY SERVIC-ING OTHER THAN THAT CONTAINED IN THE OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL

WARNING: TO PREVENT FIRE OR ELECTRIC SHOCK HAZARD. DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

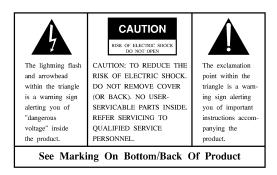




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NOTICE!

This manual covers Ericsson and General Electric products manufactured and sold by Ericsson Inc.

NOTICE!

Repars to this equipment should be made only by an authorized service technician or facility designated by the supplier. Any repairs, alterations or substitution of recommended parts made by the user to this equipment not approved by the manufacturer could void the user's authority to operated the equipment in addition to the manufacturer's warranty.

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IMPORTANT SAFETY INFORMATION

- 1. SAVE THIS MANUAL It contains important safety and operating instructions.
- 2. Before using the product, please follow and adhere to all warnings, safety and operating instructions located on the product and in the manual.
- 3. DO NOT expose product to rain, snow or other type of moisture.
- 4. Care should be taken so objects do not fall or liquids do not spill into the product.
- 5. DO NOT expose product to extreme temperatures.
- 6. DO NOT use auxiliary equipment not recommended or sold by the manufacturer. To do so may result in a risk of fire, electric shock or injury to persons.
- 7. To reduce risk of damage to electrical cord, pull by plug rather than cord when disconnecting unit.
- 8. Make sure the cord is located so it will not be stepped on, tripped over or otherwise subjected to damage or stress.
- 9. An extension cord should not be used unless absolutely necessary. Use of an improper extension cord could result in a risk of fire and electric shock. If an extension cord must be used, make sure:
 - a. That pins on the plug of the extension cord are the same number, size and shape as those of the plug on the power supply.
 - b. That the extension cord is properly wired in good condition, and
 - c. That the wire size is large enough for AC ampere rating of unit.
- 10. DO NOT operate unit with a damaged cord or plug replace them immediately.
- 11. DO NOT operate this product in an explosive atmosphere unless it has been specifically certified for such operation.

- 12. To reduce risk of electric shock, unplug unit from outlet before attempting any maintenance or cleaning.
- 13. DO NOT operate this product with covers or panels removed. This unit does not contain any user serviceable components.
- 14. Use only fuses of the correct type, voltage rating and current rating as specified in the parts list. Failure to do so can result in fire hazard.
- 15. GROUNDING AND AC POWER CORD CON-NECTION - To reduce risk of electrical shock use only a properly grounded outlet. The unit is equipped with an electric cord having an equipment - grounding conductor and a grounding plug. Be sure the outlet is properly installed and grounded in accordance with all local codes and ordinances.
- 16. DANGER Never alter the AC cord or plug. Plug into an outlet properly wired by a qualified electrician. Improper connection or loss of ground connection can result in risk of an electrical shock.
- 17. The Model 19A149979P2 is for use on a circuit having a nominal rating of 230 Vac and is factory equipped with a specific electric cord to permit connection to an acceptable electric circuit. A plug meeting local electrical codes must be supplied by the customer. Make sure the unit is connected to an outlet having the same configuration as the plug. No adapter should be used with this unit.

- NOTE —

A ferroresonant power supply is designed to work specifically at a given frequency. The 60 and 50 Hz supplies should be used at their nominal frequency \pm 2 Hz.

SPECIFICATIONS*

OUTPUT VOLTAGE	
Transmit and Receive Simultaneously	26.0 Vdc ±1.0 Vdc @ 15 Amps (F801A) 13.0Vdc ±0.5Vdc @ 3Amps (J801)
Receive only	Vdc @ 3 Amps (J801)
INPUT VOLTAGE	121 Vac ±20% (60 Hz version) 230 Vac ±15% (50 Hz version)
INPUT FREQUENCY	60 Hz ± 2 Hz (60 Hz version) 50 Hz ± 2 Hz (50 Hz version)
	but frequency, the output voltage will not vary neasured at the nominal input line frequency.
INPUT LINE SURGE PROTECTION	150 V rated MOV (60 Hz version) 275 V rated MOV (50 Hz version)
DUTY CYCLE For 0-18 Amp output	100% (Continuous Duty)
OUTPUT VOLTAGE RIPPLE	< mV p-p @ 25°C < mV p-p @ -30°C
OUTPUT TRANSIENT RESPONSE	
Overshoot	Not to exceed 30 Volts (F801A)
Undershoot	Not less than 22 Volts (F801A)
EFFICIENCY	70% @ rated TX/RX load current and nominal line voltage
FUSE CAPABILITY	
Input	10 Amp (60 Hz version)
Output	(2) 5 Amp (50 Hz version)5 Amp (Low Current Port)
	20 Amp (High Current Port)
DIMENSIONS (HxWxD)	5.25" x 19" x 10.35"
WEIGHT	45 lbs.
OPERATING ENVIRONMENT	-30° C To $+ 60^{\circ}$ C

* These specifications are intended primarily for the use of the service personnel.

DESCRIPTION

The MASTR[®] II Base Station 12/24 Volt Power Supply provides up to 429 watts to power a MASTR II 800 or 900 MHz base station receiver, system circuitry, and transmitter. The nominal 12 volt output is actually 13.0 Vdc and provides a maximum of 3 amperes to power the receiver and system circuitry. The nominal 24 volt output is actually 26.0 Vdc and provides a maximum of 15 amperes to power the transmitter power amplifier.

The 60 Hz Model (19A149979P1) operates from a nominal 121 Vac, 60 Hz source. If a 208/220/240Vac, 60 Hz source is used, an external step-down transformer (similar to 19C307148P1) must be used with the '979P1 supply. The 50 Hz model (19A149979P2) provides the same output as the '979P1 supply, but operates from a nominal 230 Vac, 50 Hz source. The output voltage will change a maximum of + 1.6% for each + 1.0% change in the input line frequency.

- NOTE -

A ferroresonant power supply is designed to work specifically at a given frequency. The 60 Hz and 50 Hz supplies should be used at their nominal frequency ± 2 Hz.

The power supply's step-down ferroresonant transformer provides excellent line voltage regulation. For the rated input line voltage range ($\pm 20\%$ for P1, $\pm 15\%$ for P2), the output voltage will not vary more than 2 %. A ferroresonant power supply provides inherently excellent line voltage surge protection, and fewer parts for high reliability. No active semiconductor devices are used which could reduce reliability.

The output voltages will vary depending on the load currents that the supply is being asked to source. As the load current rises, the output voltage will drop. Typical output voltages for various load currents are as follows: The operation and servicing of the power supply are completely accessible from the front. The ON/OFF switch and all fuses are located on the front panel. The low profile slot type fuse holders contain the primary fuse(s) F1 (F1 and F4 for P2), the high current output fuse F2, and the low current output fuse F3. The primary fuse(s) protect the input wiring to the ferroresonant transformer (one 10 amp fuse for P1, two 5 amp fuses for P2). The output fuses F2 (20 amps) and F3 (5 amps) provide external overload protection.

The 60 Hz supply provides a courtesy dual AC receptacle. The primary line current fuse (F1) also provides overcurrent protection for the dual receptacle. The 60 Hz supply draws 5 amps under nominal conditions and 7 amps under all conditions. Thus, the dual courtesy receptacles are rated for 3 amps.

CIRCUIT ANALYSIS

In the 60 Hz power supply ('979P 1), the ON/OFF switch (S1) provides line voltage to the power supply through the primary line fuse F1. Line current flows through F1 to the courtesy receptacle prior to S1. This allows line voltage to always be available at the receptacles. Current then flows through the primary of stepdown transformer (T1) via the 200°C thermal fuse. The thermal fuse would only open in the unlikely event that an internal short would develop in the transformer. The varistor (VR1- 150 V rating) provides addition input line voltage suppression.

In the 50 Hz power supply ('979P2), the ON/OFF switch (S1) is a DPST type switching both primary AC lines. In addition, both input lines have 5 amp fuses (F1 and F4). The varistor (VR1-275 V rating) provides additional input line voltage suppression. When power is applied, current flows through the primary of step-down transformer (T1) via the 200°C thermal fuse. As in the 60 Hz model, the thermal fuse would only open if the transformer develops an internal short.

The step-down transformer (T1) is a ferroresonant type which has inherently good input line voltage regulation. This eliminates the need for additional high current regula-

LOAD CURRENT C	CONDITIONS	12 V OUTPUT	24 V OUTPUT
TX AND RX SIMULTANEOUSLY	(15 + 3 AMPS)	~13.0 VDC	~26.0 VDC
RX ONLY	(0 + 3 AMPS)	<15.8 VDC	<29.0 VDC
NO LOAD	(0 + 0 AMPS)	<16.3 VDC	<30.0 VDC



Figure 1 - 60 Hz Power Supply (19A149979P1, Rev. A)



Figure 2 - 50 Hz Power Supply (19A149979P2, Rev. A)

tors. C9 serves as a resonating capacitor across the secondary taps of the transformer.

The transformer steps the input voltage down to approximately 28 Vac across two secondary windings. Each winding drives two separate full wave bridge rectifiers consisting of D1A, B through D4A, B. The rectifiers are dual diode packages and are mounted on heat sink HS 1. During the first half of the period diodes D1B, D2A, D3B, and D4A are conducting and delivering current which is summed at the input to the high current filter. During the second half of the period diodes D1A, D2B, D3A, and D4B are conducting and also delivering current which is summed at the input to the high current filter. The high current filter consists of C1-C4, C7, L1, and R1. It is designed to reduce the output ripple to less than 100 mV p-p for any current load up to 15 amps. It also keeps transient responses greater than 22 volts and less than 30 volts. Resistor R1 is a 30 ohm, 50 watt resistor that serves two functions. One, it acts as a bleeder resistor to discharge the capacitors when the supply is turned off. Two, it provides a minimum current load to prevent the output voltage from ever rising above 30 volts under any load condition. The high current filter sources up to 15 amps through the 20 amp fuse F2 to the high current output port F801A on the rear wall of the chassis. F801A-1 and F801A-2 are A + and A-, respectively, and connect to the transmitter power amplifier.

The two secondary windings are also center tapped to produce a step-down voltage of around 14 Vac which is also fed to the two full wave bridge rectifiers. During the first half of the period, diodes D2A and D4A provide a conduction path for current going to both the high current filter and the low current filter. During the second half of the period, diodes D1A and D3A provide the conduction path for current going to the high current filter and the low current filter. The low current filter consists of C5, C6, L2, and R2. It is designed to reduce the output ripple to less than 100 mV p-p for any current load up to 3 amps. It also keeps transient responses greater than 11 volts and less than 18 volts. Resistor R2 is a 100 ohm, 10 watt resistor that serves two functions. One, it acts as a bleeder resistor to discharge the capacitors when the supply is turned off. Two, it provides a minimum current load to prevent the output voltage from ever rising above 18 volts under any load condition. The low current filter sources up to 3 amps through the 5 amp fuse F3 to the low current output port J801 on the rear wall of the chassis. J801-1, 2, 3 and J801-4,5,6 are A+ and A-, respectively, and connect to the receiver and system circuitry.

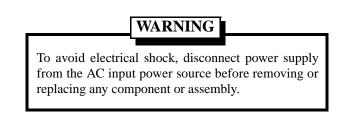
The power supply is rated for a nominal 26.0 Vdc for a 15 amp load out of F801A and for a nominal 13.0 Vdc for a 3 amp load out of J801 (receiving and transmitting simultaneously). When receiving only (a 3 amp load out of J801)

the output voltage is less than 15.8 Vdc at J801 and less than 29.0 VDC at F801A.

MAINTENANCE

For disassembly, remove 8 screws and lift off top cover. Disassembly is required before working on the power supply. When replacing any component be certain to use an identical component. Thermal joint compound is required between diodes D1, D2, D3, and D4 and the heat sink.

TROUBLE-SHOOTING



The trouble-shooting procedure in Table 1 may be helpful in isolating a defective component or assembly in a malfunctioning power supply. When a component or assembly is identified as defective, replace the defective component with an identical component. Be sure to check associated circuitry for any other damaged components before applying power to the unit.

ADJUSTMENTS

This power supply has no adjustments or controls other than the ON/OFF switch.

INSTALLATION

The power supply is normally installed in an EIA 19 inch wide rack of a MII base station cabinet. It can also be installed in a 19 inch wide stand alone open rack.

NOTE -

Insure that ventilation holes in the unit are not obstructed when the unit is mounted or in operation.

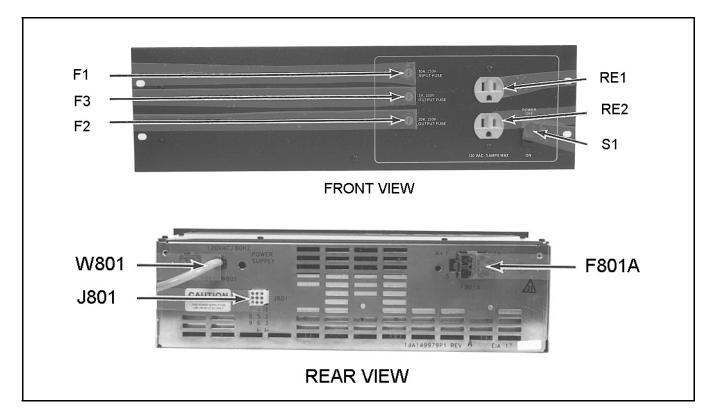


Figure 3 - 60 Hz Power Supply (19A149979P1, Rev. A)

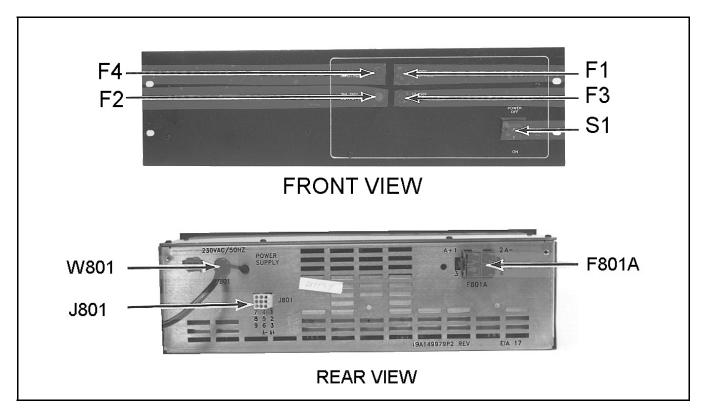


Figure 4 - 50 Hz Power Supply (19A149979P2, Rev. A)

FUSE REPLACEMENT

To replace a defective fuse, perform the following procedure:

- 1. Place ON/OFF switch to the OFF position.
- 2. For fuses F1 (F1 & F4 on '979P2), F2, or F3; remove cap from fuse holder and replace fuse with a fuse of the same type and rating.

WARNING

To avoid possible electric shock, DO NOT operate this power supply with the fuse cover removed.

WARNING

No one should be permitted to handle any portion of the equipment that is supplied with high voltage, or to connect any external apparatus to the units while the units are supplied with power. KEEP AWAY FROM LIVE CIRCUITS.

TROUBLESHOOTING PROCEDURES

Table 1 - 60 Hz Power Supply 19A149979P1

SYMPTOM	PROCEDURE
No output voltage at J801	Check the following:
	1. Open F1, F3 or S1.
	2. AC voltage on W801.
	3. Open D1, D2, D3, or D4.
No output voltage at F801A	Check the following:
	1. Open F1, F2 or S1.
	2. AC voltage on W801.
	3. Open D1, D2, D3, or D4.
Low output voltage on F801A.	Check the following:
0 < Vo < 25.0 Vdc	 If one of the dual diodes on D1, D2, D3, or D4 is shorted. NOTE: All four diode packages contain two diodes each.
	2. Line frequency < 60 Hz.
	3. Load current greater than 15.0 amps.
Low output voltage on J801.	Check the following:
0 < Vo < 12.5 Vdc	 If one of the dual diodes on D1, D2, D3, or D4 is shorted. NOTE: All four diode packages contain two diodes each.
	2. Line frequency < 60 Hz.
	3. Load current greater than 3.0 amps.
High output voltage on F801A	Check the following:
(>30.0 Vdc) or J801 (>16.3 Vdc).	1. R1 not connected between pos. 1 and 2 on F801A.
	2. R2 not connected between pos. 1 and 4 on J801.
	3. Line frequency >60 Hz.

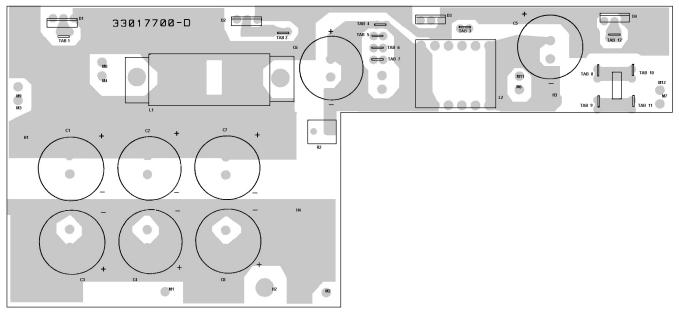
TROUBLESHOOTING PROCEDURES

SYMPTOM	PROCEDURE
No output voltage at J801	Check the following:
	1. Open F1, F3, F4 or S1.
	2. AC voltage on W801.
	3. Open D1, D2, D3, or D4.
No output voltage at F801A	Check the following:
	1. Open F1, F2, F4 or S1.
	2. AC voltage on W801.
	3. Open D1, D2, D3, or D4.
Low output voltage on F801A.	Check the following:
0 < Vo < 25.0 Vdc	 If one of the dual diodes on D1, D2, D3, or D4 is shorted. NOTE: All four diode packages contain two diodes each.
	2. Line frequency < 50 Hz.
	3. Load current greater than 15.0 amps.
Low output voltage on J801.	Check the following:
0 < Vo < 12.5 Vdc	 If one of the dual diodes on D1, D2, D3, or D4 is shorted. NOTE: All four diode packages contain two diodes each.
	2. Line frequency < 50 Hz.
	3. Load current greater than 3.0 amps.
High output voltage on F801A	Check the following:
(>30.0 Vdc) or J801 (>16.3 Vdc).	1. R1 not connected between pos. 1 and 2 on F801A.
	2. R2 not connected between pos. 1 and 4 on J801.
	3. Line frequency >50 Hz.

Table 2 - 50 Hz Power Supply 19A149979P2

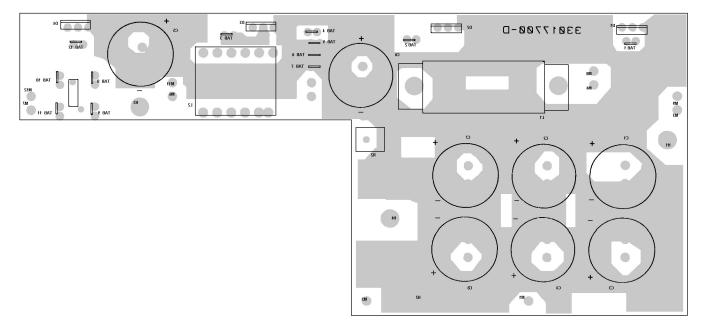
OUTLINE DIAGRAM

COMPONENT SIDE



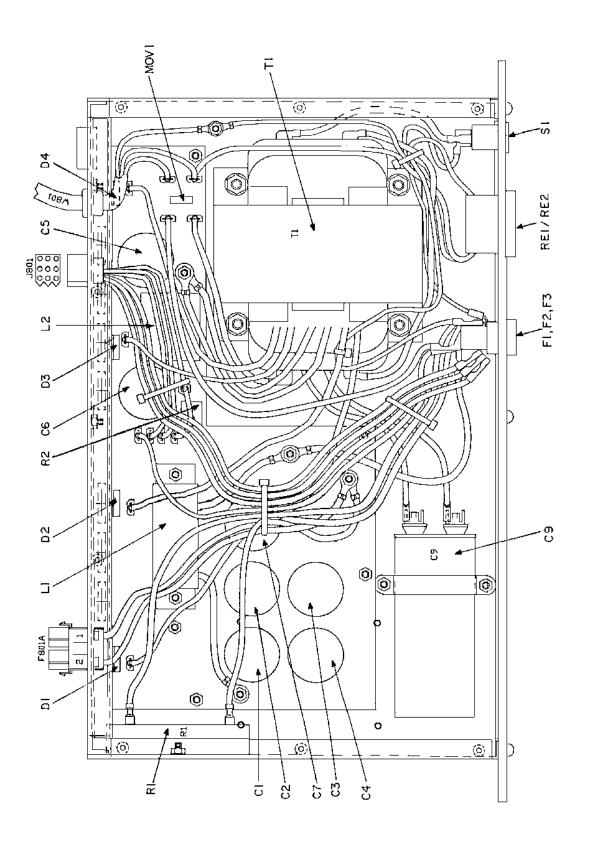
(33017704, Sh. 1) (33017700, Sh. 1)

SOLDER SIDE

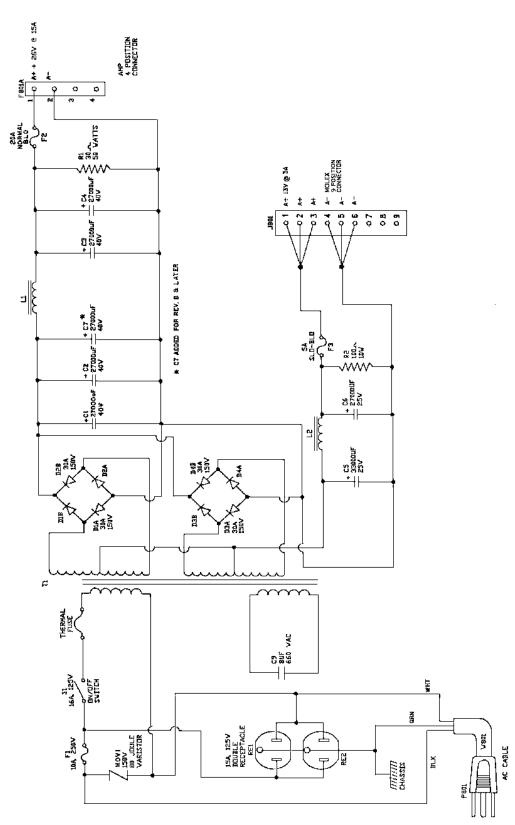


(33017704, Sh. 1) (33017700, Sh. 2)

PRINTED CIRCUIT BOARD 50 Hz AND 60 Hz MODELS



60 Hz POWER SUPPLY 19A149979P1, Rev. A



60 Hz POWER SUPPLY 19A149979, Rev A

(289PS3, Sh. 1, Rev. C)

PARTS LIST

LBI-38551

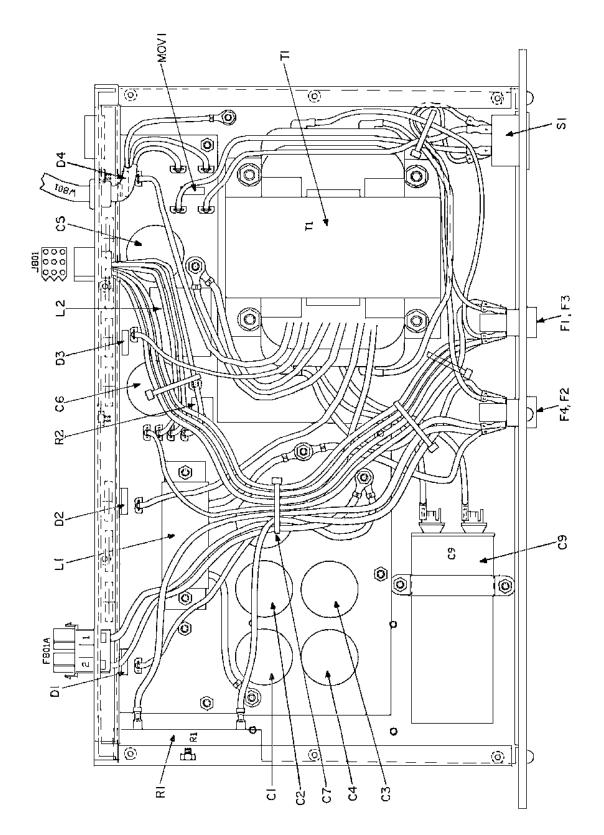
12/24 VOLT POWER SUPPLY 19A149979P1 ISSUE 1

SYMBOL	GE PART NO.	DESCRIPTION
		CAPACITORS
C9	H29/17032400	Polypropylene: 8 uF, 660Vac, similar to Ronken P61A24805H05.
F1	M29/09013901	Non-time delay Glass/Ferrule Fuse: 10 amps, 250V; similar to Bussmann AGC-10.
F2	M29/09013903	Normal blow Fuse: 20 amps, 32V; similar to Bussman AGC-20.
F3	M29/09016300	Slow Blow Fuse: 5 amps, 250V; similar to Bussmann MDL-5.
	H29/09014200	Fuse Holder, screwdriver slot design: similar to Bussmann "HTB-961". (Uwed with Fl thru F3).
		CONNECTOR
FBOIA	N29/40028600	Connector: 4 position; sim to AMP 641685-2.
J801	M29/40027400	Connector: 9 position; sim to Molex 03-09-1091.
		RESISTORS
Rl	M29/16012302	Wirewound Resistor: 30 ohms, 50 w; similar to IRC PM-50E-300HMS-5% (with bracket).
		RECEPTACLES
RE1 and RE2	N29/40027800	Receptacle: power, 3 wire grounding, 15 amps at 125V; similar to GE 5242-9.
Sl	M29/20003300	SPST: 16 amps, 125V switch; similar to Carling RA911VBBOV.
		TRANSFORMER
Tl	M29/289CV3	Ferro-Resonant Transformer.
		WIRE HARNESS
W1 thru W30	M29/289LW3	Wiring Rarness.
W901	M29/11022301	Power Cord.
	M29/07062200	Top Cover.
	M29/07063000	Front Panel.
	M29/22043800	Machine screw, TORX head: 3.5m x 1/2; Quantity 8; similar to Camcar/Textron Inc. Secures cover.
	M29/22044600	Machine screw, hex head; No. 8-32 x 5/8" secures C9 to case.
	M29/22041502	Hex nut: No. 8-32, quantity 4; secures C9, R1, and ground wire to case.
	M29/05065600	Bracket for C9; similar to GE K9827065P2L.
	M29/22041501	Hex nut: No. 6-32 x .250, guantity 10; used to secure PCB,
	M29/22043201	Nylon Standoff: Quantity 7; Used to separate PCB from case.
	M29/11022000	Strain relief, black similar to Heyco 1200. To secure W801 to case.
	M29/22041504	Nut: 1/4-20 x 7/16, guantity 4; secures T1 to case
	M29/220415D3	Nut: No. 10-32, quantity 4; used to secure terminal lugs to PCB.
	M29/22010305	Washer: #6, used to secure RE1/RE2.
	M29/22044500	Nut, 3.5M: used to secure RE1/RE2.

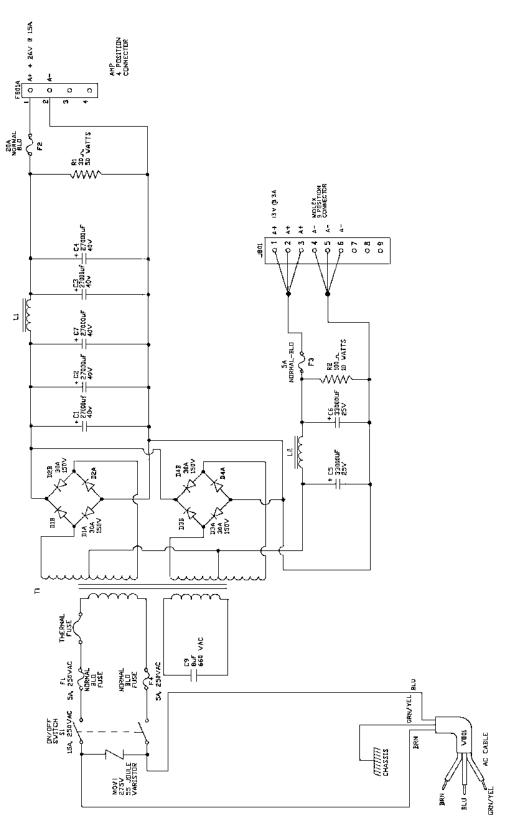
COMPONENTS	ADDED,	DELETED	OR	CHANGED	ΒY	PRODUCTION CHANGES	

*

	HERT SINK / PCB ASSEMBLY M29/91034501 (REV. 0)
	(Assembly includes the following;)
M29/17034301	Aluminum electrolytic: 27000 uF, 40V.
M29/17034300	Aluminum electrolytic: 33000 uF, 25V; sim to UCC KME25VB333M35XSOLL.
M29/17031500	Aluminum electrolytic: 27000 uF, 25V; sim to UCC KME25VB273M35X50LL.
M29/17034301	Aluminum electrolytic: 27000 uF, 40V (Rev. B & later).
N29/289C5	Output Choke: .7 mH, 15 amps.
N29/289FC4	Output Choke: .4 mH, 3 amps.
	RECTIFIERS
M29/18030500	Dual Schottky Rectifier: 30 amps, 150V; similar to GI FED30CP.
	RESISTORS
M29/116013800	Resistor: 100 ohm 10%, 10 watt.
N29/12009013	Varistor: 150V, 80j metal oxide; similar to GB
H23/18002013	visola20a.
222/122/0100	TERMINALS
M29/13048100	FASTON tabs; similar to Amp 62650-1.
	MISCELLANEOUS
M29/22045500	Pem Stud: #10-32. Quantity 4, secures PCB.
M29/22041503	<pre>Keeper Nut: #10-32, 1/8" thick. Quantity 4, secures PCB.</pre>
M29/22046700	Rivet: Quantity 2, secures L1.
M29/22025001	Flat washer: #10. Quantity 2, secures L1.
M29/11024400	Heatsink.
M29/31016703	Heat Transfer Pad: To insure good thermal conductivity between D1-D4 and heat sink.
M29/22027710	Hex head screw: No. 4-40 x .5; quantity 4, used to secure D1-D4 to heat sink.
	<pre>x29/17034300 x29/17031500 x29/17034301 x29/289C5 x29/289C4 x29/18030500 x29/18030500 x29/18008013 x29/13048100 x29/13048100 x29/22045500 x29/22045500 x29/2204500 x29/2205001 x29/1024400 x29/31016703</pre>



50 Hz POWER SUPPLY 19A149979P2, Rev. A



50 Hz POWER SUPPLY 19A149979P2, Rev. A

(289PS4 Sh. 1, Rev. C)

12/24 VOLT POWER SUPPLY 198149979P2 ISSUE 1

G9 M29/17032400	SYMBOL	GE PART NO.	DESCRIPTION
P1 N29/09016000 Normal Blow Fuse: 5 amps, 250V; similar to Busmann ODA-5. F2 N29/09013903 Normal Blow Fuse: 20 amps, 32V; similar to Busmann ACC-20. F3 N29/09016000 Normal Blow Fuse: 5 amps, 250V; similar to Busmann ACC-20. F4 N29/09016000 Normal Blow Fuse: 5 amps, 250V; similar to Busmann GDA-5. F4 N29/09016000 Puse Rolder, screwdriver slot design: similar to Busmann "NTH-96M". (used with F1, F3, and F4). F501A M29/09014200 Fuse Rolder, screwdriver slot design: similar to Busmann "NTH-96M". (used with F2). F801A M29/40028600 Connector: 4 position; sim to AMP 641665-2. J801 M29/40027400 Connector: 9 position; sim to Molex 03-09-1091. F801A M29/16012302 Nirewound Resistor: 30 ohma, 50 w; similar to IRC FM-50E-300HMS-55 (with bracket). F1 M29/20003900 DFSr. F1 M29/2085CV4 Ferro-Resonant Transformer. F1 M29/2080200 Font Famel. N1 M29/2003800 Power Cord. F1 M29/2080200 Font Famel. N1 M29/2080200 Font Cord. F1 M29/2080200 Font Famel. N129/2080200 Font Cord.			CAPACITORS
P1N29/09016000Normal Blow Fuse: S amps, 250V; similar to BUSSMAN GDA-5.F2N29/09013903Normal Blow Fuse: 20 amps, 32V; similar to Bussman AGC-20.F3 and F4N29/09016000Normal Blow Fuse: S amps, 250V; similar to Bussman GDA-5.F3 and F4N29/09016000Puse Rolder, screwdriver slot design: similar to Bussmann "RTB-96H". (Used with F1, F2, and F4). N29/09014200F801A N29/09014200Puse Rolder, screwdriver slot design: similar to Bussmann "RTB-96I". (Used with F2).F801A N29/100226600Connector: 4 position; sim to AMP 641685-2. Connector: 9 position; sim to AMP 641685-2. Connector: 9 position; sim to AMP 641685-2.R1 N29/16012302Nirewound Resistor: 30 ohms, 50 w; similar to IRC FW-50E-300HMS-5% (with bracket).F1 N29/289CV4Nirewound Resistor: 30 ohms, 50 w; similar to IRC FW-50E-300HMS-5% (with bracket).F1 N29/289CV4Perro-Resonant Transformer. 	C9	M29/17032400	Polypropylene: 8 uF, 660Vac, similar to Ronken P61A24805H05.
P2N129/09013903Bussmann GDA-5.P3NCTRAL blow Fuse: 20 amps, 32V: similar to Bussman AGC-20.P3M29/09016000NCTRAL Blow Fuse: 5 amps, 750V; similar to Bussmann GDA-5.P4NCTRAL Blow Fuse: 5 amps, 750V; similar to Bussmann WTD-96M*. (Used with F1, 73, and F4).P4N29/09016100Fuse Holder, screwdriver slot design: similar to 			
P3 rd P4H29/09016000Normal Blow Fuse: 5 amps, 250V; similar to Bussmann GDA-5.N29/09016100Fuse Holder, screwdriver slot design: similar to Bussmann WTH-961". (Used with F1, F3, and F4). N29/09014200FUSE Holder, screwdriver slot design: similar to Bussmann WTH-961". (Used with F2).F801A N29/40028600Connector: 4 position; sim to AMP 641685-2. Connector: 9 position; sim to Malex 03-09-1091. TRESISTORS	Fl	H29/09016000	Normal Blow Fuse: 5 amps, 250V; similar to Bussmann GDA-5.
and F4 Bussmann GDA-5. N29/09016100 Fuse Rolder, screwdriver slot design: similar to Bussmann "MTB-961". (Used with F1, F3, and F4.) N29/09014200 Fuse Rolder, screwdriver slot design: similar to Bussmann "MTB-961". (Used with F2). F801A M29/40028600 Connector: 4 position; sim to AMP 641685-2. J301 M29/40028600 Connector: 9 position; sim to Molex 03-09-1091. F801A M29/40028600 Connector: 9 position; sim to Molex 03-09-1091. F81 M29/16012302 Wirewound Resistor: 30 ohma, 50 w; similar to IRC FW-50E-300HMS-58 (with bracket). F1 M29/2003900 DFST. F1 M29/289CV4 Ferro-Resonant Transformer. F1 M29/289CV4 Ferro-Resonant Transformer. F1 M29/289CV4 Ferro-Resonant Transformer. F2 M29/1023800 Fower Cord. K1 M29/289CV4 Ferro-Resonant Transformer. K29/2003900 DFST. M29/1023800 K29/2003900 Fower Cord. M29/07062200 K29/2004500 Four Cord. M29/07062200 K29/2004500 From Panel. M29/2004500 M29/2004500 Brachine screw, hex head; No. 8-32 x 5/3" secures C9 Rl. and gr	¥2	M29/09013903	Normal blow Fuse: 20 amps, 32V; similar to Bussman AGC-20.
M29/09016100Fuse Rolder, screwdriver slot design: similar to Bussmann "MTH-96M". (Used with F1, F3, and F4).H29/09014200Fuse Rolder, screwdriver slot design: similar to Bussmann "MTH-96M". (Used with F2).F801AM29/40028600Connector: 4 position: sim to AMP 641685-2.J801M29/40027400Connector: 9 position: sim to Molex 03-09-1091.R1M29/16012302Wirewound Resistor: 30 ohms, 50 v; similar to IRC FW-50R-300HNS-5% (with bracket).S1M29/20003900DFST.T1M29/289CV4Ferro-Resonant Transformer.T1M29/289CV4Ferro-Resonant Transformer.Witing Harness.Witing Harness.W30M29/11023800Power Cord.M29/07063200Front Panel.M29/2004600Kachine screw, hex head; 3.5m x 1/2; Quantity 8; Secures cover.M29/22044500Hachine screw, hex head; No. 8-32 x 5/8" secures C9 to case.M29/22041501Branckfi cor C9; similar to C8827065P21.M29/22041502Reacket for C9; similar to CE K8827065P21.M29/22041501Reacket for C9; similar to CE K8827065P21.M29/22041502Reachine screw, hex head; No. 8-32 x 5/8" secures C9 to case.M29/22041501Bracket for C9; similar to CE K8827065P21.M29/22041502Bracket for C9; similar to CE K8827065P21.M29/22041501Bracket for C9; similar to Heyco 3772. To secure F081M29/22041503Strain relief, black similar to Heyco 3772. To secure F081 to case.M29/22041504Nylon Standoff: Quantity 4; secures T1 to case	and	H29/09016000	Normal Blow Fuse: 5 amps, 250V; similar to Bussmann GDA-5.
H29/09014200Fuse Holder, screwdriver slot design: similar to Bussmann "HTB-961". (Used with F2).F801AH29/40028600Connector: 4 position; sim to AMP 641685-2. Gonnector: 9 position; sim to Molex 03-09-1091. 			FUSE HOLDER & BLOCKS
F801AM29/40028600Connector: 4 position; sim to AMP 641685-2, Connector: 9 position; sim to Molex 03-09-1091.R1M29/16012302Ferconcetor: 9 position; sim to Molex 03-09-1091.R1M29/16012302Wirewound Resistor: 30 ohms, 50 w; similar to IRC FW-50E-300HMS-5% (with bracket).S1M29/20003900DFST.T1M29/289CV4Ferro-Resonant Transformer.T1M29/289CV4Ferro-Resonant Transformer.W1 thru W30M29/11023800Power Cord.S2/20003900Fower Cord.S3M29/20003900Front Panel.M29/20003900Front Panel.M29/20003900Front Panel.M29/20003900Front Panel.M29/20003900Front Panel.M29/20003900Front Panel.M29/20003900Branchine screw, toRx head: 3.5m x 1/2; Quantity 8; Secures cover.M29/20041502Hachine screw, toRx head; No. 8-32 x 5/8" secures C9 to case.M29/20056500Bracket for C9; similar to CE K9827065P21.M29/200505600Bracket for C9; similar to CE K9827065P21.M29/202041501Hev nut: No. 6-32 x .250, quantity 10; used to secure FOB.M29/11023900Strain relief, black similar to Heyco 3772. To secure K001 to case.M29/202041504Mut: 11/4-20 x 7/16, quantity 4; secures T1 to case		M29/09016100	Fuse Holder, screwdriver slot design: similar to Bussmann "HTH-96M". (Used with F1, F3, and F4).
F801AM29/40028600Connector: 4 position; sim to AMP 641685-2; J801J801M29/40027400Connector: 9 position; sim to Molex 03-09-1091.R1M29/16012302Wirewound Resistor: 30 ohma, 50 w; similar to IRC FW-50E-300HMS-5% (with bracket).S1M29/20003900DFST.T1M29/289CV4Ferro-Resonant Transformer.M1 thru 		M29/09014200	Puse Holder, screwdriver slot design: similar to Bussmann "HTB-961", (Used with F2).
J801 H29/40027400 Connector: 9 position; sim to Molex 03-09-1091. RI H29/16012302 Wirewound Resistor: 30 ohms, 50 w; similar to TRANSPORMES-54 (with bracket). S1 H29/20003900 DFST. T1 H29/289CV4 Ferro-Resonant Transformer. H1 H29/289CV4 Ferro-Resonant Transformer. W1 H29/289LW4 Wiring Harness. W10 H29/2789LW4 Wiring Harness. W30 N29/11023800 Power Cord. M29/07062200 Top Cover. M29/07063700 Front Panel. M29/22044800 Machine screw, TORX head: 3.5m x 1/2; Quantity 8; Socures COYE. M29/22044501 Hachine screw, tex head; No. 8-32 x 5/8" secures C9 to case. M29/22041502 Hex nut: No. 8-32, quantity 4: secures C9, Rl. and ground wire to Case. M29/22041501 Ber nut: No. 8-32 x .250, quantity 10; used to secure FCB. M29/22041501 Bracket for C9; similar to CE K9827065P21. M29/22041501 Ber nut: No. 6-32 x .250, quantity 10; used to secure FCB. M29/22041501 Strain relief, black similar to Heyco 3772. M29/22041504 Krain relief, black similar to Heyco 3772. M29/22041504 Krain relief, black similar to			
R1 W29/16012302 Wirewound Resistor: 30 ohms, 50 w; similar to TR/NSP07000000 S1 W29/20003900 DPST. T1 W29/20004 Ferro-Resonant Transformer. T1 W29/209CV4 Ferro-Resonant Transformer. W1 thru W30 W19/209CV4 Ferro-Resonant Transformer. W1 thru W30 N29/1023800 Power Cord. W10 M29/07062200 Top Cover. M29/07062200 Top Cover. M15CELLANEOUS MISCELLANEOUS M15CELLANEOUS		M29/40028600	Connector: 4 position; sim to AMP 641685-2.
R1 M29/16012302 Wirewound Resistor: 30 ohms, 50 w; similar to IRC FW-50E-300HMS-5% (with bracket). S1 M29/20003900 DPST. T1 M29/289CV4 Ferro-Resonant Transformer. T1 M29/289CV4 Ferro-Resonant Transformer. W1 M29/289LN4 Witing Harness. W301 M29/11023800 Power Cord. N29/07062200 Top Cover. M29/07063700 Front Panel. M29/22043800 Secures cover. M29/22044500 Machine screw, TORX head: 3.5m x 1/2; Quantity 8; Secures cover. M29/22044500 Machine screw, the head; No. 8-32 x 5/8" secures C9 to case. M29/25055500 Bracket for C9; similar to CE K9827065P21. M29/200505500 Bracket for C9; similar to CE K9827065P21. M29/22041501 Ber nut: No. 6-32 x .250, quantity 10; used to secure FCB. M29/22041501 Strain relief, black similar to Heyco 3772. M29/22041504 Nylon Standoff: Quantity 7; Used to separate PCB from case. M29/11023900 Strain relief, black similar to Heyco 3772. M29/22041504 Nut: 1/4-20 x 7/16, quantity 4; secures T1 to case	J801	H29/40027400	Connector: 9 position; sim to Molex 03-09-1091.
S1 M29/20003900 DPST. T1 M29/289CV4 Ferro-Resonant Transformer. T1 M29/289CV4 Ferro-Resonant Transformer. H1 M29/289LV4 Witing Harness. W10 M29/11023800 Power Cord. H29/07062200 Top Cover. M29/07063700 Front Fanel. M29/2043800 Secures cover. M29/07063700 Front Fanel. M29/2043800 Machine screw, TORX head: 3.5m x 1/2; Quantity 8; Secures C9 to case. M29/22044500 Machine screw, thex head; No. 8-32 x 5/8" secures C9 to case. M29/22044502 Her nut: No. 8-32, quantity 4; secures C9, Rl. and ground wire to case. M29/05056500 Bracket for C9; similar to CE K9827065P21. M29/22041501 Her nut: No. 6-32 x .250, quantity 10; used to secure FOS. M29/11023900 Strain relief, black similar to Heyco 3772. To secure K001 to case. M29/11023900 Strain relief, black similar to Heyco 3772. To secure K001 to case. M29/22041504 Nut: 1/4-20 x 7/16, quantity 4; secures T1 to case			RESISTORS
S1 M29/20003900 DFST. T1 M29/289CV4 Ferro-Resonant Transformer. T1 M29/289LV4 Witing Harness. W1 thru W30 M29/289LV4 Witing Harness. W10 M29/289LV4 Witing Harness. W30 N29/11023800 Power Cord.	RL	M29/16012302	Wirewound Resistor: 30 ohms, 50 w; similar to IRC PW-50E-300HMS-5% (with bracket).
TI W29/289CV4 Ferro-Resonant Transformer. N1 W29/289LV4 Ferro-Resonant Transformer. W1 Uhru W30 W29/11023800 Power Cord. W29/07062200 Top Cover. M29/07063200 Front Panel. M29/07063700 Front Panel. M29/2043800 Machine screw, TORX head: 3.5m x 1/2; Quantity 8; Secures cover. M29/22043800 Machine screw, hex head; No. 8-32 x 5/8" secures M29/22044500 Machine screw, hex head; No. 8-32 x 5/8" secures M29/22044502 Hex nut: No. 8-32, quantity 4: secures C9, Rl. and ground wire to Case. M29/25055500 Bracket for C9; similar to CE K9827065P21. M29/22041501 Bex nut: No. 6-32 x .250, quantity 10; used to secure FCB. M29/1023900 Strain relief, black similar to Heyco 3772. To secure W301 to case. M29/1023900 Strain relief, black similar to Heyco 3772. To secure W301 to case. M29/22041504 Nut: 1/4-20 x 7/16, quantity 4; secures T1 to case			
T1 N29/289CV4 Ferro-Resonant Transformer. N1 WIRE HARNESS W1 N29/289LN4 Wiring Harness. W30 W801 N29/11023800 Power Cord. MISCELLANEOUS M29/07062200 Top Cover. M29/07063700 Front Panel. M29/22043800 Machine screw, hex head; 3.5m x 1/2; Quantity 8; Secures cover. N29/22044800 Machine screw, hex head; No. 8-32 x 5/8" secures C9 to case. M29/22041802 Hex nut: No. 8-32, quantity 4: secures C9, R1. and ground wire to case. M29/22041801 Beacket for C9; similar to CE K9827065P21. M29/22041801 Beacket for C9; similar to de K9827055P21. M29/22041801 Beacket for C9; similar to de K9827055P21. M29/22041801 Beacket for C9; similar to de K9827055P21. M29/22041801 Rem case. M29/2204301 Nylon Standoff: Quantity 7: Used to separate PCB from case. M29/11023900 Strain relief, black similar to Heyco 3772. To secure W301 to case. M29/22041804 Nut: 1/4-20 x 7/16, quantity 4; secures T1 to case	S 1	N29/20003900	DPST.
W1 thru W30 W801 W29/11023800 Power Cord.			TRANSFORMER
N1 thru thru w801 M29/289LW4 Witing Harness. W801 M29/11023800 Power Cord. MISCELLANEOUS M29/07063200 Top Cover. M29/07063700 Front Panel. M29/22043800 Machine screw, TORX head: 3.5m x 1/2; Quantity 8; Secures cover. M29/22044800 Machine screw, hex head; No. 8-32 x 5/8" secures C9 to case. M29/22041502 Hex nut: No. 8-32, quantity 4; secures C9, R1, and ground wire to case. M29/25065600 Btacket for C9; similar to CE K9827065P21. M29/22041501 Hex nut: No. 6-32 x .250, quantity 10; used to secure PCB, M29/22043201 Nylon Standoff: Quantity 7; Used to separate PCB from case. M29/11023900 Strain relief, black similar to Heyco 3772. To secure R601 to case. M29/22041504 Nut: 1/4-20 x 7/16, quantity 4; secures T1 to case	Tl	N29/289CV4	Ferro-Resonant Transformer.
thru W301 W301 W29/11023800 Power Cord. M29/07062200 Top Cover. M29/07063700 Front Panel. M29/22043800 Machine screw, TORX head: 3.5m x 1/2; Quantity 8; Secures cover. M29/22044800 Machine screw, hex head; No. 8-32 x 5/8" secures CP to case. M29/22041502 Hex nut: No. 8-32, quantity 4; secures C9, R1. and ground wire to case. M29/22041501 Hex nut: No. 6-32 x .250, quantity 10; used to secure PCB. M29/22041501 Hex nut: No. 6-32 x .250, quantity 10; used to secure PCB. M29/22041501 Strain relief. black similar to Heyco 3772. To secure W601 to case. M29/22041504 Nut: 1/4-20 x 7/16, quantity 4; secures T1 to case			WIRE HARNESS
H29/07062200Top Cover.M29/07062200Front Panel.M29/07063700Front Panel.M29/22043800Machine screw. TORX head: 3.5m x 1/2; Quantity 8; Secures cover.M29/22044800Machine screw. hex head; No. 8-32 x 5/3" secures C9 to case.M29/22041502Hex nut: No. 8-32, quantity 4; secures C9, R1. and ground wire to case.M29/22041501Bracket for C9; similar to CE K9827065P21.M29/22041501Brancket for C9; similar to GE K9827065P21.M29/22041501Brancket for C9; similar to GE K9827065P21.M29/22041501Brandeff: Quantity 7; Used to separate PCB from case.M29/11023900Strain relief. black similar to Heyco 3772. To secure W801 to case.M29/22041504Nut: 1/4-20 x 7/16, quantity 4; secures T1 to case	thru	M29/289LW4	Witing Harness.
M29/07062200 Top Cover. M29/07063700 Front Panel. M29/22043800 Hachine screw, TORX head: 3.5m x 1/2; Quantity 8; Secures cover. M29/22044600 Machine screw, hex head; No. 8-32 x 5/8" secures C9 to case. M29/22041502 Hex nut: No. 8-32, quantity 4; secures C9, R1, and ground wire to case. M29/050656600 Bracket for C9; similar to CE K9827065P21. M29/22041501 Hew nut: No. 6-32 x .250, quantity 10; used to secure PCB, M29/22043201 Nylon Standoff: Quantity 7: Used to separate PCB from case. M29/11023900 Strain relief, black similar to Heyco 3772. To secure R601 to case. M29/22041504 Nut: 1/4-20 x 7/16, quantity 4; secures T1 to case	W801	N29/11023800	Power Cord.
M22/07063700Front Panel.M29/22043800Hachine screw, TORX head: 3.5m x 1/2; Quantity 8; Secures cover.M29/22044600Machine screw, hex head; No. 8-32 x 5/8" secures C9 to case.M29/22041502Hex nut: No. 8-13, quantity 4; secures C9, R1, and ground wire to case.M29/2041501Bex nut: No. 6-32 x .250, quantity 10; used to secure PCB,M29/22041501Hex nut: No. 6-32 x .250, quantity 10; used to secure PCB,M29/22043201Nylon Standoff: Quantity 7; Used to separate PCB from case.M29/11023900Strain relief, black similar to Heyco 3772. To secure R601 to case.M29/22041504Nut: 1/4-20 x 7/16, quantity 4; secures T1 to case			MISCELLANBOUS
 M28/22043800 Machine screw, TORX head: 3.5m x 1/2; Quantity 8; Secures cover. M29/22044600 Machine screw, hex head; No. 8-32 x 5/8" secures C9 to case. M29/22041502 Hex nut: No. 8-32, quantity 4; secures C9, R1. and ground wire to case. M29/05056500 Bracket for C9; similar to CE K9827065P21. M29/22041501 Hex nut: No. 6-32 x .250, quantity 10; used to secure PCB. M29/22043201 Nylon Standoff: Quantity 7; Used to separate PCB fro case. M29/11023900 Strain relief, black similar to Heyco 3772. To secure W601 to case. M29/22041504 Nut: 1/4-20 x 7/16, quantity 4; secures T1 to case 			Top Cover.
Secures cover.M29/22044600Machine screw, hex head; No. 8-32 x 5/8" secures C9 to case.M29/22041502Hex nut: No. 8-32, quantity 4: secures C9, R1. and ground wire to case.M29/05065600Bracket for C9; similar to CE K9827065P21.M29/22041501Hex nut: No. 6-32 x .250, quantity 10; used to secure PCB.M29/22041501Strandoff: Quantity 7; Used to separate PCB from case.M29/1203900Strain relief, black similar to Heyco 3772. To secure M601 to case.M29/22041504Nut: 1/4-20 x 7/16, quantity 4; secures T1 to case			
C9 to case. M29/22041502 Hex nut: No. 8-32, quantity 4: secures C9, R1, and ground wire to case. M29/05065600 Bracket for C9; similar to CE K9827065P21. M29/22041501 Hex nut: No. 6-32 x .250, quantity 10; used to secure PCB, M29/22043201 Nylon Standoff: Quantity 7: Used to separate PCB from case. M29/11023900 Strain relief, black similar to Meyco 3772. To secure P801 to case. M29/22041504 Nut: 1/4-20 x 7/16, quantity 4; secures T1 to case		M29/22043800	Machine screw, TORX head: 3.5m x 1/2; Quantity 8; Secures cover.
M29/05065600Bracket for C9; similar to CE K9827065P21.M29/22041501Hex nut: No. 6-32 x .250, quantity 10; used to secure PCB,M29/22043201Nylon Standoff: Quantity 7; Used to separate PCB from case.M29/11023900Strain relief, black similar to Meyco 3772. To secure P801 to case.M29/22041504Nut: 1/4-20 x 7/16, quantity 4; secures T1 to case.		M29/22044600	Machine screw, hex head; No. 8-32 x 5/8" secures C9 to case.
 M29/22041501 Her nut: No. 6-32 x .250, quantity 10; used to secure PCB, M29/22043201 from case. M29/11023900 Strain relief, black similar to Heyco 3772. To secure MS01 to case. M29/22041504 Nut: 1/4-20 x 7/16, quantity 4; secures T1 to case 		M29/22041502	Hex nut: No. 8-32, quantity 4; secures C9, R1, and ground wire to case.
secure PCB, M29/22043201 Nylon Standoff: Quantity 7: Used to separate PCB from case. M29/11023900 Strain relief, black similar to Meyco 3772. To secure R801 to case. M29/22041504 Nut: 1/4-20 x 7/16, quantity 4; secures T1 to case		M29/05065600	
from case. M29/11023900 Strain relief, black similar to Heyco 3772. To secure W801 to case. M29/22041504 Nut: 1/4-20 x 7/16, quantity 4; secures T1 to case		M29/22041501	Hex nut: No. 6-32 x .250, guantity 10; used to secure PCB,
To secure W801 to case. M29/22041504 Nut: 1/4-20 x 7/16, quantity 4; secures T1 to case		M29/22043201	Nylon Standoff: Quantity 7; Used to separate PCB from case.
case		M29/11023900	Strain relief, black similar to Heyco 3772. To secure W801 to case.
M29/27041503 Nut: No. 10-32, quantity 4; used to secure terminal lugs to FCB.		M29/22041504	
		M29/22041503	Nut: No. 10-32, quantity 4; used to secure terminal lugs to PCB.

thru D4 to GI FED3OCP. N2 N29/116013800 Resistor: 100 ohm 10%, 10 watt. Varistor: 275V, 55j metal oxide; similar to G V275LA15A. TEl thru TB1 thru TB1 thru N29/13048100 PASSON FASTON tabs; similar to Amp 62650-1. N29/22045500 Pem Stud: \$10-32. Quantity 4, secures PCB. N29/22041503 Keeper Nut: \$10-32. J/8" thick. Quantity 4, secures FCB. N29/2204500 Rivet: Quantity 2, secures L1. N29/22046700 Rivet: Quantity 2, secures L1. N29/1024400 Beatsink. N29/31016703 Heat Transfer Pad: To insure good thermal conductivity between D1-D4 and heat sink.	SYMBOL	GE PART NO.	DESCRIPTION
Assembly includes the following:) C1 M29/17034301 Aluminum electrolytic: 27000 uF, 40V. C5 mod C7 M29/17034301 Aluminum electrolytic: 33000 uF, 25V; sim to DCC KM225VB333M35X0LL. C7 M29/17034301 Aluminum electrolytic: 27000 uF, 40V. C6 C7 M29/17034301 Aluminum electrolytic: 27000 uF, 40V. C6 C7 M29/17034301 Aluminum electrolytic: 27000 uF, 40V. C6 M29/18030500 D1 M29/289FC4 Output Choke: .7 mH, 15 amps. D1 M29/18030500 Dual Schottky Rectifier: 30 amps, 150V; simil to G1 FEDDOCP. R2 M29/18008011 Varistor: 275V, 55j metal oxide; similar to G V275LAISA. M29/13048100 FASTON tabs; similar to Amp 62650-1. TB1 thru M29/22045500 Pem Stud: \$10-32, Quantity 4, secures PCB. M29/2204500 M29/22045			
03 thru 04 M29/17034301 Aluminum electrolytic: 27000 uF, 40V. Aluminum electrolytic: 33000 uF, 25V; sim to UCC KME25VB333M3550LL. 07 M29/17034301 Aluminum electrolytic: 27000 uF, 40V. 06 07 M29/17034301 Aluminum electrolytic: 27000 uF, 40V. 07 M29/17034301 Aluminum electrolytic: 27000 uF, 40V. 07 M29/17034301 Aluminum electrolytic: 27000 uF, 40V. 08			HEAT SINK / PCB ASSEMBLY M29/11024300 (REV. A)
C1 thru C4 M29/17034301 Aluminum electrolytic: 27000 uF, 40v. C5 and d6 M29/17034300 Aluminum electrolytic: 33000 uP, 25V; sim to UCC KME25VB33M5550L. C7 M29/17034301 Aluminum electrolytic: 27000 uF, 40v. L1 M29/289C5 Output Choke: .7 mH, 15 amps. L2 M29/289FC4 Output Choke: .4 mH, 3 amps. L1 M29/18030500 Duel Schottky Rectifier: 30 amps. D1 thru D4 M29/18030500 Tesistor: 100 ohm 10%, 10 watt. R2 M29/18008011 Varistor: 275V, 55j metal oxide; similar to d V275LAISA. M0VI M29/13048100 FASTON tabs; similar to Amp 62650-1. T21 thru T512 M29/22045500 Pem Stud: \$10-32, 1/8" thick, Quantity 4, secures PCB. M29/22045500 Pem Stud: \$10-32, 1/8" thick, Quantity 4, secures PCB. M29/2204500 Rivet: Quantity 2, secures L1. M29/22045001 Flat washer: \$10, Quantity 2, secures L1. M29/202040703 Heat Transfer Pad: 70 insure good thermal conductivity between D1-D4 and heat sink.			
thru Aluminum electrolytic: 33000 uP, 25V; sim to C5 M29/17034300 Aluminum electrolytic: 33000 uP, 25V; sim to C7 M29/17034301 Aluminum electrolytic: 27000 uP, 40V. L1 M29/289C5 Output Choke: .7 mH, 15 amps. L2 M29/289FC4 Output Choke: .4 mH, 3 amps. L1 M29/18030500 Duel Schottky Rectifier: 30 amps. 150V; simil thru D4 C1 FED30CP. R2 M29/18030500 Duel Schottky Rectifier: 30 amps. 150V; simil R2 M29/18030500 Puel Schottky Rectifier: 30 amps. 150V; simil R2 M29/18030500 Puel Schottky Rectifier: 30 amps. 150V; simil M0V1 M29/18008011 Varistor: 275V, 55j metal oxide; similar to G M29/13048100 FASTON tabs; similar to Amp 62650-1. TB1 M29/13048100 FASTON tabs; similar to Amp 62650-1. TB17 M29/22045500 Pem Stud: \$10-32, Quantity 4, secures PCB. M29/22045500 Pem Stud: \$10-32, 1/8" thick. Quantity 4, secures PCB. M29/2204500 Rivet: Quantity 2, secures L1. M29/2204500 Flat vasher: \$10. Quantity 2, secures L1. M29/2204500 Flat vasher: \$10. Quantity 2, secures L1. <			CAPACITORS
and C5 UCC KME2SVE333M35XS0LL. C7 M29/17034301 Aluminum electrolytic: 27000 uP, 46V. L1 M29/289C5 Output Choke: .7 mH, 15 amps. L2 M29/289FC4 Output Choke: .7 mH, 15 amps. L1 M29/289FC4 Output Choke: .4 mH, 3 amps. L2 M29/18030500 Dual Schottky Rectifier: 30 amps, 150V; simil to GI FED3OCP. M2 M29/18030500 Dual Schottky Rectifier: 30 amps, 150V; simil to GI FED3OCP. M2 M29/18030500 Persistor: 100 ohm 10%, 10 watt. M0V1 M29/18008011 Varistor: 275V, 55j metal oxide; similar to G V2755A15A. M29/13048100 FASTON tabs; similar to Amp 62650-1. TB1 H29/13048100 FASTON tabs; similar to Amp 62650-1. M29/22045500 Pem Stud: \$10-32, Quantity 4, secures PCB. M29/2204500 Rever Nut: \$10-32, 1/3" thick Quantity 4, secures PCB. M29/2204500 Rivet: Quantity 2, secures L1. M29/22020501 Flat washer: \$10. Quantity 2, secures L1. M29/21024400 Reatsink. M29/31016703 Heat Transfer Pad: 70 insure good thermal conductivity between DI-D4 and heat sink.	thru	M29/17034301	Aluminum electrolytic: 27000 uF, 40V.
L1 M29/289C5 Output Choke: .7 mR, 15 amps. L2 M29/289FC4 Output Choke: .4 mR, 3 amps. D1 M29/18030500 Dual Schottky Rectifier: 30 amps, 150V; simil to GI FED30CP. M2 M29/18030500 Dual Schottky Rectifier: 30 amps, 150V; simil to GI FED30CP. M2 M29/18030500 Resistor: 100 ohm 10%, 10 watt. M2 M29/18008011 Varistor: 275V, 55j metal oxide; similar to GV V275LAISA. M2 M29/13048100 FASTON tabs; similar to Amp 62650-1. TEN thru M29/22045500 Pem Stud: \$10-32, Quantity 4, secures PCB. M29/2204500 Resper Nut: \$10-32, 1/8" thick, Quantity 4, secures FCB. M29/2204500 Flet washer: \$10. Quantity 2, secures 11. M29/2204500 Flet washer: \$10. Quantity 2, secures 11. M29/1024400 Heat Transfer Pad: 70 insure good thermal conductivity between DI-D4 and heat sink.	and	M29/17034300	Aluminum electrolytic: 33000 uF, 25V; sim to UCC KME25VE333M35X50LL.
L1 M29/28955 Output Choke: .7 mH, 15 amps. L2 M29/289FC4 Output Choke: .4 mH, 3 amps. D1 M29/18030500 Dual Schottky Rectifier: 30 amps, 150V; simil to GI FED30CP. R2 M29/18030500 Resistor: 100 ohm 10%, 10 watt. M29/18013800 Resistor: 275V, 55j metal oxide; similar to Q V275LAISA. W29/13048100 FASTON tabs; similar to Amp 62650-1. TE1 M29/22045500 M29/22041503 Resper Nut: \$10-32, Quantity 4, secures PCB. M29/2204500 First: \$10-32, 1/8" thick, Quantity 4, secures FCB. M29/2204500 First: \$10-32, 1/8" thick, Quantity 4, secures FCB. M29/2204500 First: \$10-32, 1/8" thick, Quantity 4, secures FCB. M29/2204500 First: \$10-32, 1/8" thick, Quantity 4, secures FCB. M29/2204500 First: \$10-32, 1/8" thick, Quantity 4, secures FCB. M29/2204500 First: Quantity 2, secures L1. M29/2204500 First: Transfer Fad: 70 insure good thermal conductivity between DI-D4 and heat sink.	C7	M29/17034301	
L2 N29/289FC4 Output Choke: .4 mH, 3 amps. D1 thru D4 N29/18030500 Dual Schottky Rectifier: 30 amps, 150V; simil to GI FED30CP. R2 N29/116013800 Resistor: 100 ohm 10%, 10 watt. N29/18008011	L1	M29/289C5	
D1 thru D4 N29/18030500 Duel Schottky Rectifier: 30 amps, 150Y; simil to GI PEDJOCP. N2 N29/116013800 RESISTORS Resistor: 100 ohm 10%, 10 watt. N2 N29/116013800 VARISTOR MCV1 N29/18008011 Varistor: 275V, 55j metal oxide; similar to GV V275LAISA. TE1 thru T512 N29/13048100 FASTON tabs; similar to Amp 62650-1. M29/22045500 Fem Stud: \$10-32, Quantity 4, secures PCB. N29/2204503 Keeper Nut: \$10-32, 1/8" thick, Quantity 4, secures PCB. N29/2204500 First: Quantity 2, secures L1. N29/2204500 Flat vasher: \$10. Quantity 2, secures 11. N29/21024400 Heat Transfer Pad: To insure good thormal conductivity between D1-D4 and heat sink.			
D1 thru D4 N29/18030500 Duel Schottky Rectifier: 30 amps, 150Y; simil to GI PEDJOCP. N2 N29/116013800 RESISTORS Resistor: 100 ohm 10%, 10 watt. N2 N29/116013800 VARISTOR MCV1 N29/18008011 Varistor: 275V, 55j metal oxide; similar to GV V275LAISA. TE1 thru T512 N29/13048100 FASTON tabs; similar to Amp 62650-1. M29/22045500 Fem Stud: \$10-32, Quantity 4, secures PCB. N29/2204503 Keeper Nut: \$10-32, 1/8" thick, Quantity 4, secures PCB. N29/2204500 First: Quantity 2, secures L1. N29/2204500 Flat vasher: \$10. Quantity 2, secures 11. N29/21024400 Heat Transfer Pad: To insure good thormal conductivity between D1-D4 and heat sink.			RECTIFIERS
R2 N25/116013800 Resistor: 100 ohm 10%, 10 watt. M0V1 N29/18008011 Varistor: 275V, 55j metal oxide; similar to G W0V1 N29/18008011 Varistor: 275V, 55j metal oxide; similar to G TB1 H29/18008011 FASTON tabs; similar to Amp 62650-1. TB1 H29/13048100 FASTON tabs; similar to Amp 62650-1. M29/22045500 Pem Stud: \$10-32, Quantity 4, secures PCB. M29/22041503 Keeper Nut: \$10-32, 1/8" thick. Quantity 4, secures PCB. M29/22046700 Firet: Quantity 2, secures L1. M29/1024400 Heatsink. M29/31016703 Heat Transfer Pad: To insure good thermal conductivity between D1-D4 and heat sink.	thru	N29/18030500	
MCVI M29/18008011 Varistor: 275V, 55j metal oxide; similar to Q TEl M29/13048100 FASTON tabs; similar to Amp 62650-1. TEl h29/22045500 Faston tabs; similar to Amp 62650-1. M29/22045500 Pem Stud: \$10-32. Quantity 4, secures PCB. M29/2204500 Rivet: globaltity 2, secures L1. M29/22046700 Rivet: Quantity 2, secures L1. M29/22025001 Flat washer: \$10. Quantity 2, secures L1. M29/1024400 Heatsink. M29/31016703 Heatsink.	R2	H29/116013800	
W29/13048100 FASTON tabs: similar to Amp 62650-1. thru TB12 H29/23048100 FASTON tabs: similar to Amp 62650-1. H29/22045500 Pem Stud: \$10-32. Quantity 4, secures PCB. H29/22041503 Keeper Nut: \$10-32. Quantity 4, secures PCB. M29/22046700 Rivet: Quantity 2, secures L1. M29/22025001 Flat washer: \$10. Quantity 2, secures L1. M29/1024400 Heatsink. M29/31016703 Heat Transfer Pad: To insure good thermal conductivity between D1-D4 and heat sink.			
TEl thru TB12 H29/13048100 FASTON tabs; similar to Amp 62650-1. NISCELLANEOUS M29/22045500 Pem Stud: \$10-32, Quantity 4, secures PCB. M29/22041503 Keeper Nut: \$10-32, 1/8" thick. Quantity 4, secures PCB. M29/22046700 Firet: Quantity 2, secures L1. M29/22025001 Flat vasher: \$10. Quantity 2, secures 1. M29/1024400 Beatsink. M29/31016703 Heat Transfer Pad: To insure good thermal conductivity between D1-D4 and heat sink.	MOVI	N29/180080 11	Varistor: 275V, 55j metal oxide; similar to GE V275LA15A.
H29/22045500Pem Stud: \$10-32. Quantity 4, secures PCB.M29/22041503Keeper Nut: \$10-32, 1/8" thick. Quantity 4, secures PCB.M29/22046700Rivet: Quantity 2, secures 11.N29/22025001Flat washer: \$10. Quantity 2, secures 1M29/11024400Reatsink.N29/31016703Reats Transfer Pad: To insure good thermal conductivity between D1-D4 and heat sink.	thru	H29/13048100	
M29/22041503 Keeper Nut: \$10-32, 1/8" thick. Quantity 4, secures FCB. M29/22046700 Rivet: Quantity 2, secures 11. N29/22025001 Flat washer: \$10. Quantity 2, secures 1 N29/11024400 Heatsink. N29/31016703 Heat Transfer Pad: To insure good thermal conductivity between D1-D4 and heat sink.			NISCELLANEOUS
secures FCB. M29/22046700 Rivet: Quantity 2, secures L1. M29/22025001 Flat washer: \$10. Quantity 2, secures L1 M29/11024400 Heatsink. M29/31016703 Heat Transfer Pad: To insure good thermal conductivity between D1-D4 and heat sink.		M29/22045500	Pem Stud: #10-32. Quantity 4, secures PCB.
N29/22025001 Flat washer: #10. Quantity 2, secures £1 N29/11024400 Seatsink. N29/31016703 Heat Transfer Pad: To insure good thermal conductivity between D1-D4 and heat sink.		M29/22041503	Keeper Nut: \$10-32, 1/8" thick. Quantity 4, secures PCB.
M29/11024400 Beatsink. M29/31016703 Heat Transfer Pad: To insure good thermal conductivity between D1-D4 and heat sink.			
M29/31016703 Heat Transfer Pad: To insure good thermal conductivity between D1-D4 and heat sink.			
		M29/22027710	conductivity between D1-D4 and heat sink. Hex head screw: No. 4-40 x .S, guantity 4, used- to secure D1-D4 to heat sink.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES